

Appl. No. 10/065,220
Amdt dated June 24, 2004
Reply to Office Action dated March 24, 2004

Amendments to the Claims

This listing of claims will replace all prior versions and listing of claims in the application:

Listing of Claims:

1. (cancelled)
2. (currently amended) An integrated circuit comprising:
a memory array having a plurality of memory banks;
a plurality of comparator units, each associated with one memory bank ~~a comparator unit~~
~~being coupled to a memory bank for comparing a test pattern written to the memory bank against~~
~~data read from the memory bank; and~~
a BIST control unit coupled to the memory array, the BIST control unit generates control
signals and a test pattern for testing the memory array, wherein the comparator units facilitate
testing the memory banks simultaneously by having each comparator unit comparing a word
read from its associated memory bank with the test pattern written ~~plurality of comparator units~~
~~for testing the plurality of memory banks simultaneously, the BIST control unit provides test~~
~~control signals and the test pattern to the comparator units, wherein the test control signals~~
~~comprise addresses of memory words to be tested.~~
3. (previously presented) The integrated circuit of claim 2 wherein the memory
banks occupy a common address space and the BIST control unit generates addresses in the
common address space.

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4. (cancelled)
5. (cancelled)
6. (currently amended) The integrated circuit of claim 5 wherein the memory banks can have different sizes.
7. (previously presented) The integrated circuit of claim 2 wherein the comparator units store faulty addresses.
8. (cancelled)
9. (previously presented) The integrated circuit of claim 2 wherein the BIST control unit receives test results from the comparator units.
10. (original) The integrated circuit of claim 9 wherein the BIST control unit outputs the test results serially in response to an input clock signal.
11. (original) The integrated circuit of claim 10 wherein the test results comprise addresses of faulty words.
12. (previously presented) The integrated circuit of claim 10 wherein the test results comprise addresses of faulty words and locations of faulty bits within the faulty words.

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13. (previously presented) The integrated circuit of claim 9 wherein the test results comprise addresses of faulty words.
14. (previously presented) The integrated circuit of claim 9 wherein the test results comprise addresses of faulty words and locations of faulty bits within the faulty words.
15. (currently amended) An integrated circuit comprising:
a memory array having a plurality of memory banks, wherein a memory bank includes ~~including~~ a plurality of memory cells, ~~wherein a memory cell includes~~ having a first port and a second ports;
a plurality of comparator units, each associated with one ~~a comparator unit being coupled~~ to a memory bank for ~~comparing a test pattern written to the memory bank against data read from the memory bank;~~ and
a BIST control unit coupled to the memory array, the BIST control unit generates control signals and a test pattern for testing the memory array, wherein the comparator units facilitate testing the memory banks simultaneously by having each comparator unit comparing a word read from its associated memory bank with the test pattern written ~~plurality of comparator units for testing the plurality of memory banks in parallel, the BIST control unit provides test control signals and the test pattern to the comparator units.~~
16. (currently amended) The integrated circuit of claim 15 wherein the a test mode for testing can be either single port or dual port test mode.

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17. (currently amended) The An integrated circuit of claim 16 comprising:
a memory array having a plurality of memory banks;
a plurality of comparator units, a comparator unit being coupled to a memory bank for
comparing a test pattern written to the memory bank against data read from the memory bank,
wherein the comparator unit comprises a test control unit and a testing circuit, the test control
unit is coupled to an access control circuit and a refresh control unit; and
a BIST control unit coupled to the plurality of comparator units for testing the plurality of
memory banks in parallel, the BIST control unit provides test control signals and the test pattern
to the comparator units.

18. (currently amended) The integrated circuit of claim ~~15~~ 17 wherein the memory
banks include a plurality of memory cells having first and second ports and wherein a test mode
for testing can be either single port or dual port test mode ~~comparator unit comprises a test~~
~~control unit and a testing circuit, the test control unit is coupled to an access control circuit and a~~
~~refresh control unit.~~

19. (previously presented) The integrated circuit of claim 18 wherein the test control
signals comprise addresses of memory words to be tested.

20. (previously presented) The integrated circuit of claim 19 wherein the memory
banks can have different sizes.

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21. (previously presented) The integrated circuit of claim 19 wherein the comparator units store faulty addresses.

22. (previously presented) The integrated circuit of claim 20 wherein the BIST control unit receives test results from the comparator units.

23. (previously presented) The integrated circuit of claim 22 wherein the comparator units store faulty addresses.

24. (cancelled)

25. (currently amended) An integrated circuit comprising:
a memory array which includes a plurality of memory banks;
a plurality of comparator units, wherein at least one comparator is associated with one memory bank, ~~the plurality of comparators facilitate parallel testing of the memory banks simultaneously;~~ and
a BIST control unit coupled to the memory array, the BIST control unit receives input control signals and, in response to the input control signals, causes the integrated circuit to be in test mode and generates test control signals and a test pattern, wherein each the comparator unit compares a word read from its associated memory bank with the test pattern written the data read with the test pattern written to the memory banks.

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26. (currently amended) The integrated circuit of claim 25 wherein memory cells of the memory array ~~comprises~~ comprise dual-port memory cells and the test mode can be either single port or dual port test mode.

27. (previously presented) The integrated circuit of claim 25 wherein some or all the plurality of memory banks can be of different sizes.

28. (previously presented) The integrated circuit of claim 27 wherein memory cells of the memory array comprise dual-port memory cells and the test mode can be either single port or dual port test mode.

29. (previously presented) The integrated circuit of claim 25 wherein the test control signals comprise memory addresses to be tested.

30. (previously presented) The integrated circuit of claim 29 wherein the test mode generates test patterns selected from march, checkerboard, wordline strip, blanket, or a combination thereof.

31. (previously presented) The integrated circuit of claim 29 wherein defective addresses are stored in the comparator units.

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32. (previously presented) The integrated circuit of claim 29 wherein the BIST control unit outputs the test results comprising addresses of faulty words.

33. (previously presented) The integrated circuit of claim 29 wherein the BIST control unit outputs the test results comprising addresses of faulty words and locations of faulty bits within the faulty words.

34. (new) The integrated circuit of claim 3 wherein the comparator units store faulty addresses.

35. (new) The integrated circuit of claim 6 wherein the comparator units store faulty addresses.